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As the circles of the sphere in this projection are laid down according to their perspective representations, as viewed from the eye placed at the centre of the sphere, it is necessary to bear in mind the rules by which accurate projections upon a given plane of any original lines are procured.

Having recapitulated these rules, the author pointed out how any great circle can be graduated, and how a great circle can be drawn making any given angle with another.

Problems connected with the rising and setting of stars and the like, depend upon finding the horizon. This is easily accomplished by ascertaining, from the sidereal time and the latitude of the place, the cardinal points; and a straight line joining any two of them represents the horizon. The method of laying down the vertical circles was explained.

The author also remarked that, by means of the rules of perspective, not only the projection of any given circle upon any given plane may be drawn, but conversely, the original circle of which any given conic section may be the projection, can be determined.

It was shown how, by means of this principle, a general method was furnished of constructing by points any given conic section, and of drawing tangents to it from points either situated or not upon the curve.

VICTORIA.

LIVERPOOL. Equatoreal. (Mr. Hartnup.)

1851.	Green. M.T. h m s	R.A. h m s	Log $\frac{p}{P}$	N.P.D. ° ′ ″	Log $\frac{q}{P}$	Star of Comparison.
Jan. 12	6 51 20·7	0 36 0·83	+8·186	83 3 48·6	−9·8614	ζ Piscium
	7 21 18·2	2·75	·302	43·0	·8638	—
22	8 24 21·3	51 10·99	·501	82 2 10·4	·8695	ε Piscium
	8 54 18·7	12·89	·540	6·1	·8748	—
23	7 44 30·9	0 52 40·80	·434	81 55 52·6	·8630	ζ Piscium
	8 4 29·4	42·12	+8·472	46·0	−9·8661	—

Where P is the equatoreal horizontal parallax, p and q the corrections for parallax in time and arc respectively.

The assumed *mean* places of the stars of comparison for 1851·0, are derived from the Greenwich 12-year Catalogue.

	R.A. h m s	N.P.D. ° ′ ″
ζ Piscium	0 40 57·29	83 13 36·56
ε —	0 55 12·86	82 54 47·81

in Sir John Lubbock's tract *On the Gnomonic Projection of the Sphere*: small maps of the earth and of the heavens on the gnomonic projection may be procured at No. 6 Charing Cross for 1*d*. each. Sir John states that he can solve problems on these maps as exactly as by a 12-inch globe.

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DURHAM. Fraunhofer Equatoreal. (Mr. R. C. Carrington.)

1850.	Green. M.T.	App. R.A.	App N.P.D.	No. of Comps.		Set.
	h m s	h m s	° ′ ″	R.A.	N.P.D.	
Nov. 2	10 18 52·4	23 24 17·99	83 57 37·2	24	8	20
4	10 47 37·5	24 55·47	84 10 8·7	8	8	21
5	8 2 42·5	25 14·09	15 19·8	24	8	22
8	9 36 40·8	26 29·43	31 45·3	11	4	23
12	11 11 37·9	28 32·64	50 0·1	24	8	24
	12 0 12·4	33·67	4·7	18	6	25
14	7 17 47·7	29 36·96	84 57 0·1	14	8	26
16	8 23 6·2	30 53·90	85 3 45·8	23	8	27
21	8 32 27·2	34 28·87	16 21·9	24	8	28
27	10 16 21·2	39 33·50	24 9·3	12	6	29
28	9 59 6·9	23 40 26·84	85 24 41·5	23	8	30

Assumed *Apparent* Places of Stars of Comparison.

Name.	App. R.A.	App. N.P.D.	Set.
	h m s	° ′ ″	
Weisse, xxiii. No. 594	23 28 39·69	83 57 44·4	20
— — 458	22 46·73	84 23 42·6	21
B.A.C. 8177, Greenwich 12-year Cat.	20 24·07	26 20·6	22
— — — — —	20 24·04	26 20·7	23
Weisse, xxiii. No. 602	29 12·37	54 26·0	24
— — 534	26 16·05	51 26·5	25
— — 602	29 12·35	84 54 26·1	26
ι Piscium. From the Naut. Alm.	32 16·58	85 10 52·7	27
— —	32 16·55	10 52·9	28
Weisse, xxiii. No. 803	39 24·67	34 40·9	29
— — —	23 39 24·66	85 34 41·0	30

The observations have been corrected for refraction, and for parallax by M. Yvon Villarceau's ephemeris.

Nov. 2. Wind so loud that no observations could be taken till the planet had passed the meridian.

Nov. 4. Wind extremely boisterous. The hearing tube used throughout, but the beats frequently drowned by the roaring.

Nov. 5. Windy. The differences turned out better than expected.

Nov. 8. Not a favourable observation: troubled by wind and haze, principally by the latter.

Nov. 12. The sky recently cleared.

Nov. 14. The planet dim from moonlight entering the field.

Nov. 27. Planet and star in a difficult position. Right ascension and north polar distance measures taken separately. Some suspicion about the setting of the wire-frame on this occasion.

Nov. 28. Planet better seen than on the 27th. Observation was discontinued after this date, as the measures were found to be losing the requisite precision.

"Since the publication of M. Villarceau's ephemeris, I have applied the corrections for parallax to my former observations, and I subjoin a list of the resulting differences between the observed and computed places. I have altered the assumed place of one star only, that of set 10, taking it in preference from the Greenwich 12-year Catalogue. An error of one revolution of the micrometer (20″·0) has also been corrected. One revolution is assumed to be =20″·000 −0″·0020 (T−45° Fahr.).

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Excesses of the Ephemeris over Observation.

Set.	R.A.	N.P.D.	Set.	R.A.	N.P.D.	Set.	R.A.	N.P.D.
	s	″		s	″		s	″
1	+0·01	−0·1	11	+0·12	−3·5	21	−0·33	+2·6
2	+0·19	+1·0	12	0·00	+0·4	22	−0·27	+2·0
3	−0·39	+1·2	13	−0·07	+1·5	23	−0·64	+2·8
4	−0·30	+2·0	14	+0·36	+2·9	24	−0·54	+4·7
5	+0·13	+3·3	15	−0·35	+1·1	25	−0·44	+8·2
6	+0·09	+0·8	16	−0·64	+2·5	26	−0·63	+1·7
7	+0·42	−1·3	17	+0·15	+0·6	27	−0·12	+3·9
8	+0·32	−2·8	18	+0·31	+0·3	28	−0·58	+2·1
9	+0·36	−0·9	19	+0·50	−0·5	29	−1·17	+5·2
10	+0·36	−3·2	20	−0·31	+3·2	30	−0·81	+5·6

"Assuming that these excesses may be represented generally by the formula,

$$E = A + B \,.\, t + C \,.\, t^2,$$

the values of A, B, and C, have been computed by the formulæ given by the principle of minimum squares, and the results are,

$$\text{Excess in R.A.} = +0''{\cdot}688 + 0''{\cdot}2102 \,.\, t - 0''{\cdot}00598 \,.\, t^2$$

$$\text{N.P.D.} = +0{\cdot}020 - 0{\cdot}0336 \,.\, t + 0{\cdot}00166 \,.\, t^2$$

t being reckoned in mean days from September 20·0.

"For every ten days these expressions give,

	Calculd—Observd. R.A.	Calculd—Observd. N.P.D.		Calculd—Observd. R.A.	Calculd—Observd. N.P.D.
	s	″		s	″
Sept. 20	+0·046	+0·02	Oct. 30	−0·031	+1·33
30	+0·146	−0·15	Nov. 9	−0·250	+2·49
Oct. 10	+0·167	+0·01	19	−0·549	+3·98
20	+0·107	+0·50	29	−0·927	+5·80

which must be considered the results of the Durham observations for this opposition. We depend entirely on others for the re-observation of the stars of comparison, by far the greater number being too small for the Durham transit circle."

MARKREE. Mer. Circle. (E. J. Cooper, Esq., and A. Graham.)

1850.	Green. M.T.	R.A.	Decl.	No. Wires.	Obsd—Calcd R A.	Obsd—Calcd Decl.
	d	h m s	° ′ ″		s	″
Sept.	17·520081	23 41 24·62	+13 31 11·0	5	−0·15	+1·9
	21·506906	38 9·39	12 52 21·3	3	−0·48	+2·2
	23·500352	36 34·70	12 31 47·8	5	−0·46	−1·7
	24·497087	35 48·41	12 21 20·1	5	−0·32	−1·2
Oct.	1·474513	30 48·60	11 5 14·7	3	−0·56	−0·9
Dec.	7·304379	49 17·79	4 39 2·7	5	+0·29	+6·0
	13·292639	23 56 0·01	4 49 39·6	5	+0·41	+7·5
	21·277517	0 5 42·51	+5 12 32·0	5	+0·51	+5·9

"Corrected for parallax by Villarceau's ephemeris, *Comptes Rendus*, vol. xxxi. p. 681: the two last columns give the comparison between the observed places and those interpolated from Villarceau's ephemeris."

Sept. 17. Good observation.
Dec. 7. Good observation.
Dec. 13. Very faint.

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The following *apparent* places of stars which were either observed by mistake for *Victoria* and *Egeria*, or observed at the same time, may be useful to extra-meridian observers :—

1850.		R.A. h m s	Decl. ° ′ ″
Sept. 30		23 31 19·80	+ 11 22 12·9
Oct. 4		23 28 58·12	10 41 49·6
9		23 25 28·47	9 32 48·1
Dec. 21	9 mag.	0 4 42·09	5 11 59·3
—		1 33 0·59	11 0 13·3
1851. Jan. 8		1 39 58·47	+ 13 8 20·2

Elements.

By Dr. B. A. Gould of Cambridge, U.S., from two Normal Places, and an Observation at Washington on December 20th.

Epoch, 1851, Jan. 0·0, Berlin Mean Time.

	° ′ ″	
Mean Anomaly	65 47 23·0	
Ascending Node...........	235 29 49·8	Mean Equinox.
$\pi - \Omega$	66 25 22·2	
i	8 23 1·9	
ϕ	12 35 46·9	
μ	16′ 34″·715	
Log a	0·3682053	
Log e	9·3386184	
Log μ	2·9976987	
Period	1302 days·88	Sidereal.

Ephemeris. By M. Yvon Villarceau.

For Paris Mean Noon.

l.	R.A. h m s	Decl. ° ′ ″	Log Δ.	1851.	R.A. h m s	Decl. ° ′ ″	Log Δ.
1	0 19 52·95	+ 5 56 28·0	0·31519	Jan. 16	0 41 31·01	+ 7 18 2·1	0·35904
2	21 15·94	+ 6 1 15·1	·31826	17	43 1·15	24 7·0	·36179
3	22 39·48	6 8·5	·32131	18	44 31·69	30 15·9	·36452
4	24 3·57	11 7·9	·32434	19	46 2·62	36 28·6	·36723
5	25 28·20	16 13·4	·32735	20	47 33·93	42 45·0	·36992
6	26 53·35	21 24·6	·33034	21	49 5·62	49 5·2	·37258
7	28 19·01	26 41·5	·33330	22	50 37·68	+ 7 55 28·7	·37523
8	29 45·17	32 3·9	·33625	23	52 10·11	+ 8 1 55·6	·37785
9	31 11·82	37 31·7	·33917	24	53 42·89	8 25·8	·38046
0	32 38·94	43 4·6	·34208	25	55 16·04	14 59·0	·38304
1	34 6·51	48 42·6	·34496	26	56 49·53	21 35·3	·38560
2	35 34·55	+ 6 54 25·4	·34782	27	58 23·37	28 14·5	·38815
3	37 3·02	+ 7 0 12·9	·35065	28	0 59 57·56	34 56·6	·39067
4	38 31·93	6 4·9	·35347	29	1 1 32·07	41 41·3	·39317
5	0 40 1·26	+ 7 12 1·4	0·35626	30	1 3 6·92	+ 8 48 28·6	0·39564